

1 **TITLE OF THE INVENTION**

2 **METHOD AND SYSTEM FOR DISPLAYING A USER INTERFACE OF AN**
3 **APPLICATION PROGRAM IN A COMPUTER SYSTEM,**
4 **AND A RECORDING MEDIUM THEREFOR**

5 **CLAIM OF PROPRITY**

6 [0001] This application makes reference to, incorporates the same herein, and claims all benefits
7 accruing under 35 U.S.C. §119 from an application for *LANGUAGE DISPLAYING METHOD AND*
8 *SYSTEM OF SOFTWARE FOR COMPUTER, RECORDING MEDIA OF COMPUTER PROGRAM*
9 *THEREFOR* earlier filed in the Korean Industrial Property Office on 13 June 2001 and there duly
10 assigned Serial No. 33188/2001 by that Office.

11 **BACKGROUND OF THE INVENTION**

12 **Field of the Invention**

13 [0002] The present invention relates in general to method and system for displaying a user
14 interface of an application program in an automatically selected language, and more particularly, to
15 method and system for automatically translating the user interface of the application program into
16 an automatically selected language, and for providing a storage medium storing a language
17 translation program and being installed in the computer for automatically translating the language

of the user interface of the application program in the automatically selected language.

Description of the Related Art

[0003] In a computer system are installed and executed various kinds of application or software programs. The computer system including a personal computer is provided with an operating system, such as Windows/NT. The operating system includes a group of basic programs allowing the computer to perform basic functions while the application program allows the computer to have special functions of driving hardware devices, such as a printer connected to the computer. Typically, the application program requires a user interface in order to display on a monitor of the computer presentations or screen displays of the application program, such as menu bars, dialog boxes, message displays, instruction texts, help texts, etc., when the application program is executed and installed in the computer.

[0004] A process of developing an application program is described in Fig. 4. The process includes the steps of analyzing functions of an application program to be developed, making a development plan thereof, drafting algorithms for the application program, converting the algorithms into a plurality of programs, integrating the programs into the application program, and finally testing the application program. In the step of converting the algorithms into the programs, each program is run and tested. A plurality of files for each user interface (UI) are created during the converting step.

[0005] When the application program using a foreign language for the screen displays or the presentation of the UI is executed in the computer, the screen displays or the presentations of the

1 UI of the application program are displayed in abnormal letters in the monitor of the computer if the
2 user graphical interface of the operating system cannot support the language of the UI of the
3 application program, or if the language for the UI of the operating system is neither identical to nor
4 compatible with a foreign language of the UI of the application program. Thus, in order to use the
5 application program in any operating system of the computer using any basic language, the
6 developing process of the applications program further requires that screen displays and the
7 presentations for the UI of the application program are individually programmed in a number of
8 different languages including the foreign and basic language, and that a lot of UIs programmed in
9 the various foreign and basic languages are tested for the screen displays and the presentations
10 during the programming precess.

[0006] However, when the UIs are individually programmed in a number of various foreign and basic languages, the programming process becomes complicated. Moreover, the developing process of the application program is disadvantageous because the manufacturing cost of the application program would not be reduced.

SUMMARY OF THE INVENTION

16 [0007] It is an object of the present invention to provide improved method and system able to
17 display a user interface of an application program on a monitor of a computer in an automatically
18 selected language.

[0008] It is another object to provide improved method and system for reduce manufacturing cost and time for making an application program executed in a computer.

1 [0009] It is still an object to provide improved method and system able to automatically translate
2 presentations and screen display of a user interface of an application program in an automatically
3 selected language.

4 [0010] It is yet another object to provide improved method and system able to translate
5 presentations and screen display of a user interface of an application program into the language for
6 an operating system of a computer.

7 [0011] It is still yet another object to provide improved method and system able to provide a
8 storage medium storing a program causing a computer to perform translating the user interface of
9 an application program in a basic language used in an operating system of the computer when the
10 application program is executed in the operating system of the computer having the basic language
11 different from the application program.

12 [0012] It is also an object to provide an improved operating system of a computer able to remove
13 a plurality of user interfaces using different languages from an application program except a desired
14 user interface using a desired language.

15 [0013] It is further an object to provide method and system enabling an application program to
16 have only a single language for a user interface which is able to be translated in the same language
17 as the operating system of a computer by a language translation program.

18 [0014] These and other objects may be achieved by providing method and system separately
19 providing an operating system of a computer using a first or basic language for a first user interface,
20 an application program using a second or foreign language for a second user interface and executed
21 along with the operating system in the computer, and a language translation program being installed

1 in the operating system of the computer and automatically translating the second user interface into
2 the first language.

3 **[0015]** The method includes the steps of executing the applications program, determining the kind
4 of each language for the user interfaces of the application program and the operating system,
5 comparing the kind of the second language for the user interface of the application program with the
6 kind of the first language for the user interface of the operating system, automatically translating the
7 second language of the application program into the first language of the operating system when the
8 two languages are not identical to each other, and displaying the user interface of the application
9 program in the first language of the operating system.

10 **[0016]** The translating step includes the steps of translating the second language of the application
11 program into a common language, and translating the common language into the same language as
12 the operating system.

13 **[0017]** The system for displaying the first and second interfaces of the operating system of the
14 computer and the application program includes a language translation part having at least one
15 encoding program, a language determining part recognizing the first and second languages of the
16 operating system and the application program, and a control part comparing the kind of the first
17 language of the operating system with the kind of the second language of the application program
18 and controlling the language translation part to encode the second language of the second user
19 interface into the first language when the kind of the second language of the application program is
20 not identical to the first language of the operating system.

21 **[0018]** The system further includes a common language translation part translating the second

1 language of the application program into the common language, and the control part controls the
2 language translation part to translate the common language translated by the common language
3 translation part into the first language of the operating system.

4 [0019] A first computer readable storage medium for storing programming instructions causing
5 the computer to perform a language translation includes the language translation part, the language
6 determining part, and the control part and is read by the computer, and then the programming
7 instructions for the language translating is installed in the computer. A second medium for storing
8 an application program having the second user interface in the second language is read by the
9 computer, and the application program is read by the computer, and then the application program
10 is installed in the computer to perform a displaying function of the second user interfce of the
11 application in the computer. The first medium and the second medium are separately provided and
12 individually installed in the computer. The second medium does not include the second user
13 interface in more than two different language while programming instructoins stored in the first
14 medium enables the computer to translate the second user interface into one of the first and second
15 languages.

16 **BRIEF DESCRIPTION OF THE DRAWINGS**

17 [0020] A more complete appreciation of the invention, and many of the attendant advantages,
18 thereof, will be readily apparent as the same becomes better understood by reference to the following
19 detailed description when considered in conjunction with the accompanying drawings in which like
20 reference symbols indicate the same or similar components, wherein:

1 [0021] Fig. 1 is a block diagram illustrating an operating system constructed according to the
2 principle of the present invention;

3 [0022] Fig. 2a is a block diagram showing a direct translation of a language translation part of Fig.
4 1;

5 [0023] Fig. 2b is a block diagram showing an indirect translation of the language translation part
6 of Fig 1;

7 [0024] Fig. 3 is a flow chart showing a method of automatically translating and displaying a
8 display screen in an automatically selected language in a computer constructed according to the
9 principle of the present invention; and

10 [0025] Fig. 4 is a flow chart of a conventional method for developing application and basic
11 program.

12 DETAILED DESCRIPTION OF THE INVENTION

13 [0026] Fig. 1 is a block diagram showing an operating system (OS)1 of a computer for displaying
14 a user interface in a language. Operating system 1 of the computer, such as a personal computer,
15 includes a group of basic programs controlling and performing basic operations of the computer. An
16 application or software program 5 is installed in the computer and operated in dependence with
17 operating system 1.

18 [0027] A first or basic language is used for displaying a first user graphical interface of operating
19 system 1 while a second or foreign language is used for displaying a second user interface of
20 application program 5, such as presentations or screen displays of application program 5, on a

1 monitor of the computer. Whenever application program 5 is executed in the computer, the second
2 user interface of the application program is supposed to be displayed in the second language on the
3 monitor regardless of the first language of operating system 1.

4 [0028] A user interface displaying function of operating system 1 includes a language translation
5 program 7 installed into the operating system 1. The language translation program 1 may be
6 individually provided in a first storage medium separate from said operating system 1 and installed
7 in operating system1 of the computer. Language translation program 7 translates either from the
8 second language into the first language or from the first language into the second language.

9 [0029] Language translation program 7 connected to application program 5 includes a language
10 determining part 11 receiving and recognizing both the kind of the first language of operating
11 system 1 and the kind of the second language of application program 5, a language translation part
12 13 translating the second language used for displaying the second user interface of application
13 program 5 by means of a plurality of encoding programs for translation, such as English to Korean,
14 Japanese to Korean, French to Korean, etc., a control part 9 comparing the kind of the first language
15 with the kind of the second language to automatically make a determination whether the first and
16 second languages used in operating system 1 and application program 5 are identical to each other,
17 and controlling a language translation part 13 to automatically translate the second language used
18 for displaying the second user interface of application program 5 into the first language in response
19 to the comparison and the determination of language determining part 11, thereby displaying
20 presentations or screen displays of the second user interfce of application program 5 in the first
21 language.

1 [0030] Language translation program 7 is stored in a hard disk drive (not shown) of the computer.

2 When the computer is booted, language translation program 7 is read from the hard disk drive and

3 stored in operating system 1 to be simultaneously operated together with operating system 1 when

4 application program 5 operates.

5 [0031] Language determining part 11 recognizes the each kind of the first language of operating

6 system 1 and the second language of application program 5 through an application program interface

7 (API). The API includes a means for calling a function for exchanging information of operating

8 system 1 and application program 5 when operating system 1 communicates with application

9 program 5. Control part 9 receives the information about the kind of the first language of operating

10 system 1 from a language storage part 3 of operating system 1 by calling the function of

11 "GetSystemDefaultLangID" through the API, and further receives the information about the kind

12 of the second language from application program 5 when application program 5 is executed in the

13 computer. Language determining part 11 recognizes the kind of the second language of the second

14 user interface of application program 5 through program files related to the second user interface of

15 application program 5.

16 [0032] Language translation part 13 includes a plurality of encoding programs for translation, such

17 as English-Korean, Japanese-Korean, French-Korean, etc. When application program 5 is executed,

18 the second user interface of application program 5 is supposed to be newly displayed on the monitor

19 of the computer. Language translation part 13 reads presentations or screen displays of the second

20 user interface, such as menu bars, letters, texts, etc., from program files related to the second user

21 interface of application program 5 and translates the presentations or the screen displays into the first

1 language.

[0033] Language translation part 13 has two different translation methods: direct and indirect translation methods. Figs. 2a and 2b are block diagrams showing the direct and indirect translation methods performed in language translation part 13 of Fig. 1. Language determining port 11 recognizes and determines the first language of operating system 1 and the second language application program 5 as language A and language B, respectively. When language translation part 13 performs the direct translation method, language translation part 13 directly encodes language B, the second language for displaying the second user interface of application program 5, into language A, the first language for displaying the first user interface operating system 1.

[0034] On the other hand, if the indirect translation method is used, language translation part 13 encodes language B into a common language (e.g. English) through a common language translation part (not shown) and then encodes the common language into language A, the first language for the indirect translation method. Therefore, language translation program 7 either translates from the second language into a common language and then from the common language to the first language or translates from the first language into the common language and then from the common language into the second language in accordance with encoding procedures of language translation part 13.

[0035] Here, the direct translation method can be performed relatively and comparatively faster than the indirect translation method. However, the direct translation method needs a number of $n(n-1)$ encoding programs while the indirect translation method requires a number of $2n$ encoding programs comparatively less than the direct translation method. Nevertheless, the direct translation method is more accurate than the indirect translation method.

1 [0036] Fig. 3 is a flow chart of a user interface displaying method of the computer. Language
2 translation program 7 is installed in the computer and stored within operating system 1 to be
3 operated together with operating system 1 in step S1. If application program 5 using the second
4 language for the second user interface is executed in step S3, language determining part 11
5 recognizes and determines the first language of operating system 1 and the second language of
6 application program 5 in step S5. Control part 9 compares the first language with the second
7 language in step S7 and controls language translation part 13 to encode the second language for the
8 second user interface of application program 5 into the first language when the first and second
9 languages are not identical to each other in step S9, thereby displaying the second user interface of
10 application program 5 in the first language in step S11. Thus, the user may read the presentations
11 and screen displays of the second user interface displayed in the first language.

12 [0037] With this configuration, the second language for the second user interface of application
13 program 5 operated by operating system 1 can be translated into the first language of operating
14 system 1, and then the presentations or screen displays of the second user interface are displayed in
15 the same first language as operating system 1, thereby allowing a user to easily read in the first
16 language of the computer the second user interface of application program 5 which is supposed to
17 be displayed in the second language. If the second language is identical to the first language, the
18 second user interface of application program 5 is displayed in the first language in step S13.

19 [0038] Moreover, because an application program developer does not have to separately make the
20 second user interface of the application program into a number of various and different foreign
21 languages, the time and the cost for developing the application program can be significantly reduced.

1 [0039] Language translation program 7 constructed according to the principle of the present
2 invention is stored in various types of the first recording medium, such as a floppy diskette, a
3 compact disk, an optical disk, etc. The first recording medium may be separately manufactured from
4 application program 5 and installed in the computer prior to the installation of the application
5 program in the computer. When the first recording medium is operated in the computer, language
6 translation program 7 stored in the recording medium is read by the computer and stored the hard
7 disk drive of the computer. Whenever the computer is booted, language translation program 7 is
8 stored within operating system 1 to be simultaneous operated together with operating system 1.
9 Thus, application program 5 is operated in the computer, application program 5 and language
10 translation program 7 are operated simultaneously.

11 [0040] The first storage medium stores programming instructions that, when read by the computer
12 having operating system 1 and application program 5, causes the computer to perform the user
13 interface displaying and translating method, the storage medium including a language determining
14 unit that when executed in by the computer, causes the computer to recognize and determine the kind
15 of the first language used in the first user interface of operating system 1 and the second language
16 used in the second user interface of application program 5, a language translation unit that when
17 executed by the computer, causes the computer to translate the second language to the first
18 language, and a control unit that when executed by the computer, causes the computer to compare
19 the first language with the second language and to control the language translation unit to translate
20 the second language into the first language when the kind of the first language is not identical to the
21 kind of the second language.

1 [0041] The first storage medium stores programming instructions that, when read by a processor
2 in the computer having operating system 1 and application program 5, causes the processor of the
3 computer to perform recognizing and determining the kind of the first language used in the first user
4 interface of operating system 1 and the second language used in the second user interface of
5 application program 5, making a determination of whether the kind of the first language is identical
6 to the kind of the second language, and translating the second language into the first language in
7 response to the determination that the kind of the first language is not identical to the kind of the
8 second language.

9 [0042] Moreover, a second storage medium for storing application program 5 having the second
10 user interface only in the second language is separately provided from the first storage medium. The
11 second storage medium is read by the computer, and then the application program 5 is installed in
12 the computer to perform a displaying function of the second user interface of the application in the
13 computer. The first storage medium and the second storage medium may be separately provided and
14 separately installed in the computer. The second storage medium does not include the second user
15 interface in more than two different languages because the first storage medium enables the second
16 user interface to be translated into one of the first and second languages. Therefore, even if
17 application program 5 does not have the second user interface in the same language as the operating
18 system of the computer, any application program constructed according to the principle of the
19 present invention can be installed in any computer having the language translation program.

20 [0043] Further, the present invention may be applied to a small mobile computer, such as a
21 personal digital assistants (PDA), a palm personal computer, etc., which includes an operating

1 system.

2 [0044] As described above, the present invention provides the user interface translating and
3 displaying method and system which can display the second user interface of an application program
4 in any basic language used in the first user interface of the operating system of the computer.

5 Further, because a software program developer does not have to separately create the user interface
6 in a plurality of different foreign languages, the time and the cost of developing the application
7 program can be reduced.

8 [0045] Although the preferred embodiments of the present invention have been disclosed for
9 illustrative purpose, those skilled in the art will appreciate that various modifications, additions and
10 substitutions are possible, without departing from the scope and spirit of the invention as disclosed
11 in the accompanying claims.